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May 28, 2008

Mr. Robert Reuter
Department of Ecology
Northwest Regional Office
3190 160th Ave SE
Bellevue, WA 98008-5452

**RE: Alaskan Copper Works
Chrome Slag Waste Generation and Treatment by Generator Update**

Mr. Reuter,

On behalf of Alaskan Copper Works, Clean Harbors Environmental Services, Inc (CHES) is providing this update on the status of a recent treatment study and pilot test of chrome contaminated slag waste generated by Alaskan Copper Works.

Background

Alaskan Copper Works is a pipe fabricator located at 3200 S 6th Avenue in Seattle Washington. As a component in their fabrication processing iron and stainless steel plates are cut to form using a high temperature torch commonly referred to as a (plasma cutting table). Slag from the cutting operation drops into an underlying collection tray.

Historical sampling has revealed slag waste to contain TCLP chrome at or above the maximum concentrations listed under 40CFR Part 261.24 and therefore characterized as an EPA regulated waste (D007).

This waste is regularly removed from the cutting table collection tray several times a year using a vac truck and directly transferred into 55 gallon containers. These containers are then marked hazardous waste then dewatered over the course of a 90 period before being finally being manifested off-site to an EPA permitted TSD.

Generation volumes historical run between 40,000 pounds to 80,000 pounds annually depending on production rates.

In the Alaskan Copper 2007 pollution prevention plan update submitted to the Department of Ecology (Ecology) it was indicated that a treatability study and pilot test would be conducted on this waste stream under the standards in 2002 Technical Information Memorandum (TIM) #96-412 "Treatment by Generator".

CHES has recently completed treatability studies and pilot testing on a single run of waste slag generated earlier this year. The results of the pilot testing reveal successful treatment of all contaminants of concern to below regulatory levels.

Treatment Concept

Treatment offered by CHES involves a stabilization process known as mineralization. Mineralization is a method by which TCLP heavy metal contaminated media can be rendered into a non RCRA state by adding common chemistries directly into the media to create naturally occurring less toxic minerals.

Mineralization can be conducted in a variety of simple and cost effective ways and the results are instantaneous and verifiably irreversible. Through a chemical change called "Isomorphic Substitution".

This isomorphic property of the resulting mineral is the ability for similar ions or molecules having similar size and charge to interchange within the crystalline matrix without causing a change in the crystal structure or physical properties of the mineral. Although this property to interchange ions sometimes occurs naturally, isomorphism can be forced to occur given certain controlled environmental influences.

The isomorphic property of the mineral is irreversible. Once the mineral is formed it can only be broken down under extreme conditions. Any number of highly toxic ions can be placed permanently within the mineral structure making them nearly insoluble and significantly more resistant to leaching than typical stabilization techniques.

Although the exact formulation of the reagents applied in the chrome contaminated waste stream is proprietary in nature, CHES would be willing to provide additional technical data to Ecology under a confidentiality agreement.

Pilot Project Information

In early January 2008 CHES provided oversight of the removal of approximately 15,000 pounds of slag waste from the plasma table holding tray. Prior to removal, the slag was partially dewatered to the limits of the collection tray wastewater holding tank. Slag was then removed from the table using a vac truck transferred to an on-site containment area where the contents were emptied into 55 gallon containers placed in secondary containment. Further dewatering was conducted by decanting free liquid and dispensing directly into the existing facility wastewater treatment process. The remaining solids were transferred into a plastic lined drop box equipped with a bottom mounted decanting filter where additional dewatering was completed.

On January 15, 2008 CHES collected and tested a composite sample of untreated slag waste to establish a treatment reagent mix design. The sample revealed chrome at or above RCRA regulatory limits of 5.0 ppm TCLP.

In March 2008, CHES applied a prepared reagent directly into the containerized dewatered slag waste which was then circulated through a vac truck to provide 100% contact then reloaded into the drop box. Over the next 30 days a composite and one grab sample was collected from treated slag and sent to an independent state certified laboratory for TCLP metals and LC50. The results were compared to the pre-treatment sample of the waste slag prior to the application of reagent. A summary of pre and post treatment test results are provided in Appendix A.

CHES has determined that the resulting treated waste stream no longer exhibits the characteristics of RCRA hazardous waste or state dangerous waste as defined under 40CFR Subpart B and C as well as WAC 173-303-070.

All elements of the pilot project were conducted under a written health and safety plan with all equipment, including the vac truck, decontaminated with resulting flushate sent to the wastewater treatment system.

Non-Regulated Waste Slag Disposition

CHES will assist Alaskan Copper Works in developing a simplified methodology for dewatering and treatment that will reduce material handling while avoiding the generation of hazardous waste all together.

CHES will continue to conduct verification testing for each batch of waste slag generated during 2008. In every future situation, Alaskan Copper Works will pull one composite sample for RCRA 8 metals prior to determination and removal of treated slag off site.

Alaskan Copper Works intends to recycle all treated solid waste slag to local cement kilns as a raw material substitute under the Washington Sate sandblast grit recycling provisions.

Alaskan Copper Works will provide to any additional information deemed appropriate by Ecology prior to the off-site shipment of this first treated volume of solid waste.

Recordkeeping and Documentation

Alaskan Copper Works will retain all confirmation testing results and supporting documentation for all generated slag for a period of three years and will provide updated information in all subsequent Pollution Prevention annual reports

On behalf of Alaskan Copper Works, CHES is pleased to have received positive feed back from Ecology staff and is extremely appreciative of the technical support, comments and suggestions provided by Ecology during the course of this endeavor.

Please feel free to contact me should you have any questions concerning this matter.

Respectfully,

Matthew Dunn
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Attachments: Copies of Laboratory Test Results and QAQC